

Pulp and Paper

**1995 TRI Releases for Pulp and Paper Facilities (SICS 2611 - 2631)
by Number of Facilities Reporting (pounds/year)***

Chemical Name	# Reporting Chemical	Fugitive Air	Point Air	Water Discharges	Underground Injection	Land Disposal	Total Releases	Avg. Releases Per Facility
Ammonia	197	458,947	11,480,155	2,662,738	0	29,451	14,631,291	74,271
Methanol	175	8,832,019	121,189,529	6,698,626	0	1,289,953	138,010,127	788,629
Hydrochloric Acid	161	14,270	24,262,290	630	0	0	24,277,190	150,790
Chlorine	154	109,835	1,291,237	79,852	0	5	1,480,929	9,616
Sulfuric Acid	148	893	12,913,084	1,161	0	250	12,915,388	87,266
Acetaldehyde[C]	124	540,470	8,250,267	204,670	0	17,385	9,012,792	72,684
Phosphoric Acid	123	578	29	7,917	220	370	9,114	74
Catechol	106	579	505	24,545	0	3,729	29,358	277
Phenol	99	14,209	935,873	15,124	0	8,025	973,231	9,831
Chlorine Dioxide	95	8,666	1,271,494	0	0	0	1,280,160	13,475
Chloroform[C]	81	3,079,137	6,434,460	315,561	0	4,297	9,833,455	121,401
Formic Acid	72	1,958	9,761	0	0	0	11,719	163
Formaldehyde[C]	60	57,371	1,678,059	82,435	0	7,306	1,825,171	30,420
Methyl Ethyl Ketone	58	67,233	1,452,974	41,796	0	4,981	1,566,984	27,017
Nitrate Compounds	54	0	0	7,950,016	0	2,601	7,952,617	147,271
Zinc Compounds[M]	49	31	238,241	347,553	0	2,171,080	2,756,905	56,263
Cresol (Mixed Isomers)	40	4,111	888,000	10,176	0	1,208	903,495	22,587
Nitric Acid	22	32	1,322	0	0	0	1,354	62
Certain Glycol Ethers	19	22,219	110,141	27,394	0	603	160,357	8,440
Chloromethane	16	76	563,300	14	0	5	563,395	35,212
Ethylene Glycol	16	6,699	36,045	36,832	0	1,449	81,025	5,064
Toluene	14	287,724	984,541	2,420	0	2	1,274,687	91,049
Copper Compounds[M]	7	0	261	1,370	0	1,800	3,431	490
Chromium Compounds[C, M]	6	270	1,170	54,100	0	39,505	95,045	15,841
Xylene (Mixed Isomers)	6	3,980	103,325	337	0	0	107,642	17,940
Benzene[C]	5	18	693,800	6	0	2	693,826	138,765
Naphthalene	5	11,788	78,310	965	0	33	91,096	18,219
N-butyl Alcohol	4	32,760	64,511	5,234	0	0	102,505	25,626
Dichloromethane[C]	4	163,019	54,491	172	0	5	217,687	54,422
Styrene[C]	4	11,890	101,796	285	0	0	113,971	28,493
Dazomet	4	630	370	230	0	0	1,230	308
Antimony Compounds[M]	3	0	0	0	0	250	250	83
Barium Compounds[M]	3	0	500	8,930	0	35,265	44,695	14,898
1,2,4-trimethylbenzene	3	28,500	8,050	500	0	750	37,800	12,600
Diethanolamine	3	540	2,060	700	0	0	3,300	1,100
Decabromodiphenyl Oxide	3	0	0	0	0	500	500	167
Manganese Compounds[M]	2	8	6	470	0	0	484	242
Nickel Compounds[C, M]	2	0	750	250	0	90,000	91,000	45,500
Acrylic Acid	2	1	300	36	0	0	337	169
Methyl Isobutyl Ketone	2	50	23,520	0	0	1	23,571	11,786
N-hexane	2	166,918	160,588	0	0	0	327,506	163,753
Propylene	2	0	36,000	0	0	0	36,000	18,000
Potassium Dimethyldithiocarbamate	2	0	0	5	0	0	5	3
Sodium Dimethyldithiocarbamate	2	0	0	0	0	0	0	0
Manganese[M]	2	5	1,175	69,431	0	0	70,611	35,306
Copper[M]	2	0	1,900	298	0	1,810	4,008	2,004
Sodium Nitrite	2	0	45,000	0	0	0	45,000	22,500
Hydrogen Fluoride	2	0	86,896	0	0	0	86,896	43,448
Ozone	2	5	0	0	0	0	5	3
C.I. Direct Blue 218	2	0	0	6	0	0	6	3
Mercury Compounds[M]	1	1,000	450	110	0	0	1,560	1,560
Nicotine and Salts	1	4,823	3,029	750	0	0	8,602	8,602
Polychlorinated Alkanes	1	0	0	0	0	0	0	0
Chlorodifluoromethane[O]	1	14,000	0	0	0	0	14,000	14,000
Dichlorodifluoromethane[O]	1	10,000	0	0	0	0	10,000	10,000
Dibutyl Phthalate	1	0	0	0	0	0	0	0
Biphenyl	1	5,000	0	80	0	0	5,080	5,080
O-xylene	1	3	48,000	0	0	1	48,004	48,004

**1995 TRI Releases for Pulp and Paper Facilities (SICS 2611 - 2631)
by Number of Facilities Reporting (pounds/year)***

Chemical Name	# Reporting Chemical	Fugitive Air	Point Air	Water Discharges	Underground Injection	Land Disposal	Total Releases	Avg. Releases Per Facility
Ethylbenzene	1	510	70	0	0	0	580	580
Acrolein	1	0	54,000	0	0	0	54,000	54,000
Maleic Anhydride	1	210	230	0	0	0	440	440
Nabam	1	0	0	0	0	0	0	0
Asbestos (Friable)[C]	1	1	1	1	0	0	3	3
Mercury[M]	1	0	0	0	0	0	0	0
Silver[M]	1	0	0	0	0	0	0	0
Antimony[M]	1	0	0	0	0	250	250	250
Zinc (Fume or Dust)[M]	1	0	367,965	1,309	0	240,950	610,224	610,224
	305**	13,962,986	195,929,831	18,735,235	220	3,953,822	232,582,094	762,564

[C] Known or suspect carcinogens

[M] Metals and metal compounds

[O] Ozone depleters

* Refer to Section III for a discussion of the TRI data and its limitations, methodology used to obtain this data, definitions of the column headings, and the definitions of carcinogens, metals, and ozone depleters.

**Total number of facilities (not chemical reports) reporting to TRI in this industry sector.

**1995 TRI Transfers For Pulp and Paper Facilities (SICS 2611 - 2631)
by Number of Facilities Reporting (pounds/year)***

Chemical Name	# Reporting Chemical	Potw Transfers	Disposal Transfers	Recycling Transfers	Treatment Transfers	Energy Recovery	Total Transfers	Avg. Transfer Per Facility
Ammonia	197	706,520	26,692	.	7,092	.	740,304	3,758
Methanol	175	39,983,720	144,339	3,436,333	7,454,726	98,735	51,118,103	292,103
Hydrochloric Acid(Acid " Aerosols" Only)	161	250	255	.	12,500	.	13,005	81
Chlorine	154	14,261	0	.	0	.	14,261	93
Sulfuric Acid	148	10	5	200	300	.	515	3
Acetaldehyde[C]	124	82,996	601	5	26,384	14,870	124,856	1,007
Phosphoric Acid	123	1,392	0	.	573	.	1,965	16
Catechol	106	76,104	443	.	774	90,363	167,684	1,582
Phenol	99	204,490	3,116	5	6,265	14,005	227,881	2,302
Chlorine Dioxide	95	0	0	.	0	.	0	0
Chloroform[C]	81	306,379	3,159	250	12,165	.	321,953	3,975
Formic Acid	72	253,432	90	.	0	.	253,522	3,521
Formaldehyde[C]	60	39,773	17,306	.	45,310	3,147	105,536	1,759
Methyl Ethyl Ketone	58	23,600	965	23,962	16,505	15,500	80,532	1,388
Nitrate Compounds	54	8,559	13,065	.	.	.	21,624	400
Zinc Compounds[M]	49	35,930	1,726,814	14,000	249,352	.	2,026,096	41,349
Cresol (Mixed Isomers)	40	2,419	541	.	1,800	3,150	7,910	198
Nitric Acid	22	0	.	.	660	.	660	30
Certain Glycol Ethers	19	20,042	575	.	45,301	.	65,918	3,469
Chloromethane	16	250	0	.	5	.	255	16
Ethylene Glycol	16	21,885	230	.	11	.	22,126	1,383
Toluene	14	0	10	9,726	8,034	394,852	412,622	29,473
Copper Compounds[M]	7	1,897	40,980	6,522	.	.	49,649	7,093
Chromium Compounds[C, M]	6	950	19,775	.	.	.	20,725	3,454
Xylene (Mixed Isomers)	6	0	.	391	420	7,765	8,576	1,429
Benzene[C]	5	0	.	.	.	.	0	0
Naphthalene	5	0	.	53,000	.	.	53,000	10,600
N-butyl Alcohol	4	0	.	.	35,342	.	35,342	8,836
Dichloromethane[C]	4	0	10	.	.	.	10	3
Styrene[C]	4	0	10	.	.	.	10	3
Dazomet	4	0	.	.	0	.	0	0
Antimony Compounds[M]	3	250	12,800	.	.	.	13,050	4,350
Barium Compounds[M]	3	0	41,015	2,500	.	.	43,515	14,505
1,2,4-trimethylbenzene	3	250	255	250	2,100	.	2,855	952
Diethanolamine	3	51,000	61	.	17	.	51,078	17,026
Decabromodiphenyl Oxide	3	750	28,029	.	.	.	28,779	9,593
Manganese Compounds[M]	2	0	16,557	.	.	.	16,557	8,279
Nickel Compounds[C, M]	2	0	94,000	.	.	.	94,000	47,000
Acrylic Acid	2	0	.	.	.	.	0	0
Methyl Isobutyl Ketone	2	0	.	.	.	.	0	0
N-hexane	2	0	.	.	287	18,528	18,815	9,408
Propylene	2	0	.	.	.	.	0	0
Potassium Dimethyldithiocarbamate	2	0	.	.	.	.	0	0
Sodium Dimethyldithiocarbamate	2	0	.	.	.	.	0	0
Manganese[M]	2	0	27,412	.	.	.	27,412	13,706
Copper[M]	2	0	.	.	.	.	0	0
Sodium Nitrite	2	0	.	.	.	.	0	0
Hydrogen Fluoride	2	0	.	.	.	.	0	0
Ozone	2	0	.	.	.	.	0	0
C.I. Direct Blue 218	2	73	1,400	.	.	.	1,473	737
Mercury Compounds[M]	1	0	1,511	.	.	.	1,511	1,511
Nicotine and Salts	1	0	6,043	.	.	.	6,043	6,043
Polychlorinated Alkanes	1	0	231,700	.	.	.	231,700	231,700
Chlorodifluoromethane[O]	1	0	.	.	.	.	0	0
Dichlorodifluoromethane[O]	1	0	.	.	.	.	0	0
Dibutyl Phthalate	1	0	.	.	.	2,082	2,082	2,082
Biphenyl	1	0	560	.	.	.	560	560
O-xylene	1	0	.	.	.	.	0	0

**1995 TRI Transfers For Pulp and Paper Facilities (SICS 2611 - 2631)
by Number of Facilities Reporting (pounds/year)***

Chemical Name	# Reporting Chemical	Potw Transfers	Disposal Transfers	Recycling Transfers	Treatment Transfers	Energy Recovery	Total Transfers	Avg. Transfer Per Facility
Ethylbenzene	1	0	.	.	100	850	950	950
Acrolein	1	0	.	.	.	.	0	0
Maleic Anhydride	1	0	.	.	.	.	0	0
Nabam	1	0	.	.	.	.	0	0
Asbestos (Friable)[C]	1	0	10,478	.	.	.	10,478	10,478
Mercury[M]	1	0	.	.	4	.	4	4
Silver[M]	1	0	.	.	2	.	2	2
Antimony[M]	1	250	.	.	.	.	250	250
Zinc (Fume or Dust)[M]	1	0	.	.	.	.	0	0
	305**	41,865,048	2,470,802	3,547,144	7,926,029	663,847	56,473,370	185,159

[C] Known or suspect carcinogens

[M] Metals and metal compounds

[O] Ozone depleters

* Refer to Section III for a discussion of the TRI data and its limitations, methodology used to obtain this data, definitions of the column headings, and the definitions of carcinogens, metals, and ozone depleters.

**Total number of facilities (not chemical reports) reporting to TRI in this industry sector.

Ten Largest Volume TRI Releasing Pulp and Paper Facilities Reporting Only SICS 2611 - 2631*		
Rank	Facility¹	Total TRI Releases in Pounds
1	Westvaco Corp., Covington, Virginia	4,753,321
2	Finch Pruyn & Co. Inc., Glens Falls, New York	4,561,665
3	Champion Intl. Corp., Canton, North Carolina	4,404,470
4	Westvaco Corp., North Charleston, South Carolina	3,834,983
5	Federal Paper Board Co. Inc., Riegelwood, North Carolina	3,714,811
6	International Paper, Georgetown, South Carolina	3,361,778
7	Mead Coated Board Inc., Cottonton, Alabama	3,356,653
8	International Paper, Mansfield, Louisiana	3,191,457
9	Great Southern Paper, Cedar Springs, Georgia	3,156,127
10	Inland Container Corp., Rome, Georgia	3,082,005

Source: *US EPA 1995 Toxics Release Inventory Database*.

*Refer to Section III for a general discussion of TRI data and its limitations. A discussion of the methodology used to develop this table can be found under the heading *Ten Largest Volume TRI Releasing Facilities*.

Ten Largest Volume TRI Releasing Facilities Reporting Only SICS 2611 - 2631 or SICS 2611 - 2631 and Other SIC Codes*			
Rank	Facility¹	SIC Codes Reported in TRI	Total TRI Releases in Pounds
1	Weyerhaeuser Co., Longview, Washington	2421, 2429, 2493, 2611, 2621, 2812	5,705,746
2	Westvaco Corp., Covington, Virginia	2631	4,753,321
3	Finch Pruyn & Co. Inc., Glens Falls, New York	2611, 2621	4,561,665
4	Champion Intl. Corp., Canton, North Carolina	2621	4,404,470
5	Westvaco Corp., North Charleston, South Carolina	2611, 2631	3,834,983
6	Federal Paper Board Co. Inc., Riegelwood, North Carolina	2611, 2621, 2631	3,714,811
7	International Paper, Georgetown, South Carolina	2611, 2621	3,361,778
8	Mead Coated Board Inc., Cottonton, Alabama	2631	3,356,653
9	International Paper, Mansfield, Louisiana	2631	3,191,457
10	Great Southern Paper, Cedar Springs, Georgia	2631	3,156,127

Source: *US EPA Toxics Release Inventory Database, 1995*.

*Refer to Section III for a general discussion of TRI data and its limitations. A discussion of the methodology used to develop this table can be found under the heading *Ten Largest Volume TRI Releasing Facilities*.

¹ Being included on this list does not mean that the release is associated with non-compliance with environmental laws.

Source Reduction and Recycling Activity for Pulp and Paper Facilities (SICs 2611-2631) as Reported within TRI*									
A	B	C	On-Site			Off-Site			J
Year	Quantity of Production- Related Waste (10 ⁶ lbs.) ^a	% Released and Transferred ^b	D	E	F	G	H	I	% Released and <u>Disposed</u> ^c <u>Off-site</u>
			% Recycled	% Energy Recovery	% Treated	% Recycled	% Energy Recovery	% Treated	
1994	1,930	15%	3%	10%	72%	0%	0%	3%	12%
1995	1,744	17%	2%	11%	71%	0%	0%	3%	14%
1996	1,818	---	2%	10%	72%	0%	0%	3%	13%
1997	1,764	---	2%	11%	71%	0%	0%	3%	14%
Source: 1995 Toxics Release Inventory Database. * Refer to Section III for a general discussion of TRI data and its limitations. A discussion of the methodology used to develop this table can be found under the heading <i>Source Reduction and Recycling Activity</i> . ^a Within this industry sector, non-production related waste < 1% of production related wastes for 1995. ^b Total TRI transfers and releases as reported in Section 5 and 6 of Form R as a percentage of production related wastes. ^c Percentage of production related waste released to the environment and transferred off-site for disposal.									

Five-Year Enforcement and Compliance Summary for the Pulp and Paper Industry*									
A	B	C	D	E	F	G	H	I	J
Region	Facilities in Search	Facilities Inspected	Number of Inspections	Average Months Between Inspections	Facilities with 1 or More Enforcement Actions	Total Enforcement Actions	Percent State Lead Actions	Percent Federal Lead Actions	Enforcement to Inspection Rate
I	54	52	433	7	16	32	50%	50%	0.07
II	32	28	291	7	14	52	88%	12%	0.18
III	44	41	606	4	11	46	98%	2%	0.08
IV	113	99	1,382	5	31	138	88%	12%	0.10
V	147	122	948	9	30	54	48%	52%	0.06
VI	32	31	386	5	24	47	77%	23%	0.12
VII	10	9	54	11	1	1	100%	0%	0.02
VIII	2	2	32	4	1	4	0%	100%	0.13
IX	22	18	135	10	5	13	92%	8%	0.10
X	28	28	363	5	17	91	85%	15%	0.25
TOTAL	484	430	4,630	6	150	478	80%	20%	0.10

*Data obtained from EPA's Integrated Data for Enforcement Analysis (IDEA) System. For a description of IDEA and the methods used to obtain this data, refer to Section II.C. A discussion of this table can be found under the heading, *Five-Year Enforcement and Compliance Summary*, in Section III.